Patent Claims

1. Method of drying substrates, especially semiconductor wafers, after a wet treatment in a treatment liquid, according to which a gas mixture that is composed of a carrier gas and an active substituent, and that reduces the surface tension of the treatment liquid, is applied to the treatment liquid, and the substrates are moved out of the liquid by producing a relative movement between the substrates and the liquid, characterized in that the concentration of the active substituent in the gas mixture is actively controlled in an open or closed loop manner.

2. Method according to claim 1, characterized in that the gas mixture is formed by mixing essentially pure carrier gas and a mixture of carrier gas and the active substituent.

3. Method according to claim 1 or 2, characterized in that the mixture of carrier gas and the active substituent is formed by conveying the carrier gas through a liquid of the active substituent, and the temperature of the liquid of the active substituent is controlled to a predetermined temperature in an open or closed manner.

4. Method according to claim 3, characterized in that the temperature of the liquid of the active substituent is kept essentially constant.

5. Method according to claim 3, characterized in that the temperature of the liquid of the active substituent is altered in a controlled manner throughout a drying process.

6. Method according to claim 5, characterized in that the concentration of the active substituent in the mixture composed of carrier gas and the active substituent is measured, and the temperature of the liquid of the active substituent is adjusted as a function of the measured concentration.

7. Method according to one of the preceding claims 2 to 6, characterized in that the flow rate of the carrier gas is controlled, in an open or closed loop manner and in particular is altered throughout a drying process.

8. Method according to claim 7, characterized in that the concentration of the active substituent in the mixture of carrier

gas and the active substituent is measured, and the flow rate of the carrier gas is adjusted as a function of the measured concentration.

9. Method of drying substrates, especially semiconductor wafers, after a wet treatment in a treatment liquid, according to which a gas mixture that is comprised of a carrier gas and an active substituent, and that reduces the surface tension of the treatment liquid, is applied to the treatment liquid, and the substrates are moved out of the liquid by producing a relative movement between the substrates and the liquid, characterized in that the gas mixture is formed at least partially by introducing a predetermined quantity of the carrier gas and a predetermined quantity of a liquid of the active substituent into an evaporator.

10. Method according to claim 9, characterized in that the concentration of active substituent in the gas mixture is controlled in a open or closed loop manner.

11. Method according to one of the claims 9 or 10, characterized in that the concentration of the active substituent in the gas mixture is measured after the evaporator, and the flow rate of the carrier

gas and/or of the liquid of the active substituent is adjusted as a function of the measured concentration in order to obtain a predetermined concentration.

12. Method according to one of the preceding claims, characterized in that the concentration of the active substituent in the gas mixture is altered as a function of the position of the substrates relative to the surface.

13. Method according to claim 12, characterized in that the concentration of the active substituent in the gas mixture is increased as the cross-sectional surface between the substrates and the treatment liquid increases, and is reduced as the cross-sectional surface is reduced.

14. Method according to one of the preceding claims, characterized in that the active substituent is isopropyl alcohol (IPA), and the average IPA concentration in the gas mixture is kept below 15%, especially below 10%, of the lower explosion level (LEL).

15. Method according to claim 14, characterized in that the average IPA concentration in the gas mixture is kept between 3% and 10% of the lower explosion level (LEL).